CLAIMS

5 1.   In a telecommunications transmission system using a DTM system as multicarrier system and having at least two VDSL systems, each comprising a pair of modems, said at least two VDSL systems belonging to a single binder group common to both VDSL systems, a method in said DMT system for keeping

10 DMT frames aligned to the same frame timing **characterised by** the steps of

-    estimating the time mis-alignment and power of cross-talk DMT signals added to a received DMT signal when the estimate is used by the modem to

15   synchronise its own frame timing to a main cross-talkers frame timing and

-    that auto-correlation is used on the received signal and a delayed copy of the received signal and

20 -   that correlation maxima detects that determine the frame boundaries of different DMT components of the received signal.

2. A method, as claimed in claim 1 **characterised in** that, the

25 method uses the inherent property of DMT signals and that part of the signal is correlated, in the time domain, in terms of cyclic extensions.

3. A method, as claimed in claim 1 **characterised in** that, the method further comprising the step that the time mis-alignment of the cross-talk signals estimates as the distance between the correlation maximum corresponding to the desired

5   signal (known location) and other correlation maxima.

4. A method, as claimed in claim 3 **characterised in** that, the method further comprising the step that the amplitude of a

10   correlation maximum is a relative measure of the power of the corresponding cross-talker.

5. A method, as claimed in claim 3 **characterised in** that, the

15   method further comprising the step that when the time offset of the cross-talk is estimated at the VTU-O, this information will be used to adjust its clock and frame boundaries to align with the cross-talker and hence orthogonality is achieved and the distortion is minimized.

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6 A method, as claimed in claim 3 **characterised in** that, the method further comprising the step that if the auto-correlation peak amplitude of the cross-talk signal is low the VTU-O can choose to not align clock and frame boundaries

25   since the cross-talker then do not significantly contribute to the distortion and hence a threshold level will be used.

7. A method, as claimed as claimed in any previous claim **characterised in** that the presented method to estimate frame

30   boundaries of cross-talkers can be used for several other

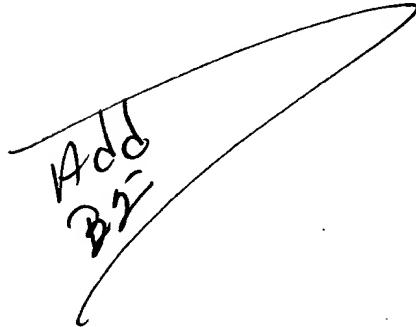applications, e.g., NEXT cancellation algorithms and multi-user detection algorithms.

8. A method, as claimed as claimed in any previous claim **characterised in** that the presented method to estimate frame boundaries of cross-talkers every starting-up modem in a system uses this method result in that all modems that cause interference in each other's receivers will become aligned to the same frame timing.